

# First-order polynomial differential equations over matrix skew series

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## Abstract

In this paper we prove that one can reduce the solution of first-order polynomial matrix ordinary differential equations to the integration of similar scalar equations, provided that equation parameters are triangular. We establish requirements to elements of the desired matrix in the case when its parameters are double diagonal matrices. We consider the Riccati equation over the set of third-order square matrices. The obtained results are formulated in terms of "skew series", the notion of which was introduced by us earlier. © 2014 Allerton Press, Inc.

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## Keywords

matrix differential equation, order reduction, skew series